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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/564,200	01/11/2006	Takashi Kariya	282371US90PCT	7428
22850 7590 09/05/2007 OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			EXAMINER ABRAMS, NEIL	
			ART UNIT	PAPER NUMBER
			2839	
			NOTIFICATION DATE	DELIVERY MODE
			09/05/2007	ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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## Office Action Summary

Application No.

10/564,200

Applicant(s)

KARIYA

Examiner

Neil Abrams

Art Unit

2839

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 8-1-2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-3 and 5-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 5-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

### DETAILED ACTION

Claims 11-19 objected to, claim 11, line 10, is unclear. Claim 12, "the thickness of core" has no antecedent basis.

1. Claims 1-3, 5-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aruma in view of Turlik, Faroog, Ikeda, Milkovich and Japan 59-996.

2. The patents are applied as in last office with Turlik, Ikeda, Faroog and Milkoich used for Youngs modulus. For Milkovich, average of the three layers 3, 5, 7 is used. For Ikeda, interposer 4, 6 materials are same as some listed by applicant, specification, page 5 so should have same Young's modulus. Obvious to use any of materials of these four patents for Azuma, figure 1, Interposer 2. Any of them adequate for claims 1, 11 languages. For Faroog 50Gpa is seen as sufficiently close to recited 55Gpa lower limit

3. Claim 1, 11 recited thickness ratio .05 to 1.5 times pcb thickness seems met by depictions in Azuma as well as Faroog, figure 3, Ikeda (interposer 4, 6), and Japan figure 5. Even through these are schematic, they are seen to generally reflect that which is typical in the art and the secondary references are applied to reinforce Azuma disclosure as to such ratio. Further, the recited ratio seems to be broad enough to cover most or all actual examples of use of interposers between chips and pcbs. Applicant asked if they dispute this assertion. Claims 1, 11 (as understood) call for interposer holes in grid form. This is 1) seen to be standard and 2) shown by Japan patent figure 3. Obvious to so form Azuma interposer since that is industry standard.

For claim 11, staggered grid would be obvious variation and not asserted to overcome regular grid feature as depicted in Japan patent.

4. Dependent claim features are not separately argued are seen to relate to obvious variations and to stand or fall with claims 1, 11.

5. For claims 2, 3, 5, 9, 14, 18, multilayer board is industry standard. Obvious to so from Azuma pcb 3. Claim 20, ground power and signal are standard in the art. Claim 21 defines no structure over any of the applied patents.

6. Claims 11-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over the references as applied to claims 1 and 11 above, and further in view of Berrett and Chang.

7. Should the matter be at issue, also obvious to use a staggered grid in Azuma in view of Barrett, figures 1, 2 and Chang figures 4, 5 to provide greater spacing between contacts.

8. Claims 2, 5, 9, 12, 14, 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over the references as applied to claims 1 and 11 above, and further in view of Uchikawa

9. Should the multilayer pcb with core feature be at issue, Uchikawa added to show such a pcb. Obvious to use that type in Azuma at 3 for added circuit paths.

10. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over the references as applied to claim 1 above, and further in view of Watari.


11. Obvious to use power or ground in view of Watari at 4, 5.

12. Applicant's arguments filed with the amendment have been fully considered but they are not persuasive. The Young's modulus not appears to be at issue. The arguments appear directed only to the recited thickness ratio. Examiner notes that the Azuma parts 2, 3 as shown are within that ratio as are those of most other applied patents. Also see Barrett, figure 3 at 10, 40, Matsda at 15, 11. Soga at 9, 2, Wojnar at 50, 12. Alcoe at 28, 24, Arai at 43, 42. Spielberger at 32, 25. These show that it is typical to form interposer thickness in manner that meets recited thickness ratio.

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication should be directed to Neil Abrams at telephone number 571-272-2089

  
NEIL ABRAMS  
PRIMARY EXAMINER